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(54) Projection system with selective reflective screen

(57) Selective reflective optical apparatus includes
a projection screen. The projection screen has structure

constructed and arranged to selectively reflect only in-
cident optical energy of a predetermined number of nar-
row bands of optical wavelength regions.

DRAWING 7
MINIMAL RISK CONSTRUCTION
3/15/01, B.L.

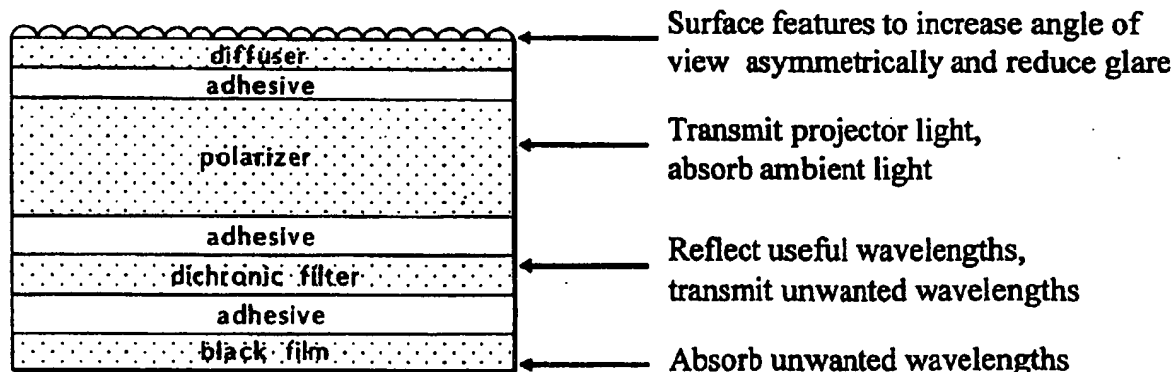


FIG. 7



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EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	PATENT ABSTRACTS OF JAPAN vol. 017, no. 658 (P-1654), 6 December 1993 (1993-12-06) -& JP 05 216123 A (TOPPAN PRINTING CO LTD), 27 August 1993 (1993-08-27)	1-5, 9-12, 21, 22, 32	G03B21/60
Y	* abstract; figures 1-6 *	17-19, 34-40, 57, 58	
X	EP 0 856 768 A (XEROX CORP) 5 August 1998 (1998-08-05)	1, 9-12, 21, 22, 32	
A	* column 3, line 35 - column 4, line 81 *	52-56, 63-65	
Y	* figures 1-4, 6-8 *	17-19, 34-40, 57, 58	
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Y	* the whole document *	17-19, 34-40, 57, 58	
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The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 30 May 2003	Examiner PAVON
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons</p> <p>& : member of the same patent family, corresponding document</p>			

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Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (InLCI.7)
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Y	* abstract *	17-19, 34-40, 57,58	
X	* paragraph '0020! *	6-8, 13-16, 23-25,51	
X	* paragraph '0026!; figure 9 *	27-29, 60-62, 66,68	
X	* paragraphs '0003!, '0004!, '0006! *	17-19, 34-37,39	
X	* paragraphs '0005!, '0011!, '0019! *	20,30, 31,41, 47-49	
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The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 30 May 2003	Examiner PAVON
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons</p> <p>& : member of the same patent family, corresponding document</p>			

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Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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Y	EP 0 493 863 A (HERTZ INST HEINRICH) 8 July 1992 (1992-07-08) * the whole document *	58	
Y	GB 652 859 A (LIBBEY OWENS FORD GLASS CO) 2 May 1951 (1951-05-02) * page 13, left-hand column, line 32 - line 55 *	57	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
Place of search MUNICH		Date of completion of the search 30 May 2003	Examiner PAVON
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03.02 (P4/C01)



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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



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LACK OF UNITY OF INVENTION
SHEET B

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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1-5, 9-12, 21, 22, 32, 52-56, 63-65 and 67

The problem addressed in claims 1-5, 9-12, 21, 22, 32, 52-56, 63-65 and 67 is to enhance the contrast of images projected onto a projection screen by reducing the influence of ambient light on the projection screen. The solution proposed is an absorbing material that selectively absorbs light at specific wavelengths.

2. Claims: 6-8, 13-16, 23-26, 51, 57 and 59

The problem addressed in claims 6-8, 13-16, 23-26, 51, 57 and 59 is to enhance the contrast by increasing the luminance of the projected image. The solution proposed is multilayer interference coating that selectively reflects specific wavelengths of the projected light.

3. Claims: 27-29, 60-62, 66 and 68

The problem addressed in claims 27-29, 60-62, 66 and 68 relates to an ambient light for an audience without reducing contrast of a projection system. The solution proposed is a source of ambient light with an inverse spectral structure to that of the projector.

4. Claims: 17-19, 33 and 34-40

The problem addressed in claims 17-19, 33 and 34-40 is to adapt the viewing angle of the image projected on the screen to an audience. The solution proposed is an asymmetric diffuser for angular spreading of the projected image.

5. Claims: 20, 30, 31, 41, 47-49 (and 50?)

The problem addressed in claims 20, 30, 31, 41, 47-49 (and 50?) is to enhance the contrast between ambient light and projected light. The solution proposed is a polarizing layer for absorbing light of a polarization direction orthogonal to that of the projector. It is not clear if claim 50 should belong to this group or to group 7.

6. Claim : 58

The problem addressed in claim 58 relates to the problem of optimizing the angle of incidence of light upon the screen, which is solved by using a curved screen.



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LACK OF UNITY OF INVENTION
SHEET B

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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

7. Claims: 42-46 (and 50?)

The problem addressed in claims 42-46 (and 50?) is to balance the spectrum of the projector lamp. The solution proposed is to use a second light source for adding a colour to the spectrum of the first lamp. It is not clear if claim 50 should belong to this group or to group 5.

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 02 10 2872

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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30-05-2003

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82